

SOUTHEAST UNIVERSITY
Department of CSE, SSE
Spring 2017 Midterm Exam

Program	B. Sc. in CSE	Section	1 (KMH)
Course Code	CSE4047	Title	Advanced Java
Room	1201	Date/Time	March 8, 2017 12:30 PM
Duration	90 minutes	Marks	30

Instructions

- Examinees are not allowed to use cell phones or any communication devices in the exam hall
- For this examination, the examinees are allowed to use two pages of handwritten (not photocopied) A4-paper as a cheat sheet which must be signed by the course instructor

Broad Questions

1. The following paragraph is taken from “Tour Operator System Informal Description” by Zhang (2012): [10]

The system need to keep track of people. For each person, it records all his/her address, of which exactly one is designated as the mailing address (so each person has at least one address). Each address consists of country, province/state, city, street, street number, P.O. Box number, and a list (possible empty) of phone numbers to the location of the address and a list (possible empty) of fax numbers to the location of the address. In addition to the list of addresses for each person it records a list (possible empty) of cell phone numbers and a list (possible empty) of email address. Each person in the database can be an old customer (have taken a tour of the company), a current customer (is booked to take a tour or is on a tour right now), a tour guide, an employee (works for the tour company), or any mixture of these (for instance an employee can take a tour and so can be a customer as well, or an employee can work as a tour guide for a particular tour and hence be an employee and a guide at the same time etc.). The sex and age of each person must also be recorded, a date-of-birth is optional for an external worker, a contract reference for each of the tours the guide is doing must be included. A guide contract references the tour (see below) and the total amount the tour guide will be paid for the tour. The guides do not pay for the accommodation and the meals.

Study the paragraph above and write down the model classes to represent this scenario. Writing one or two samples for getter/setter would do. I don't need to see each and everyone of them. I'm more interested about the property listings for each class. We

want to save this projects data into a database called “tourdb” hosted in a server with IP address “172.17.0.119”. We can connect to this database using “whoami” as username and “iamyou” as password. Design and implement the DAO for “Employee” type.

Short Questions

2. Assume that we have created our model classes “Customer” and “Product” in a package called “com.whatever.model”. We want to persist the objects of these classes into a database called “storedb”. The database is hosted on a server whose IP address is “203.190.2.15”. We have an account on the DBMS that allows us read/write access to the database. The account’s username is “myacc” and the password is “mypass”. You can also assume that initially the database doesn’t have any tables created. We want to connect to this database, create the necessary tables, store and retrieve data using Hibernate ORM. Your task is to write the configuration file for this purpose. [5]
3. Assume that you have a class “Customer” that has three properties: two Strings “first-Name” and “lastName” and “age” as an integer. We are given an `ArrayList<Customer>` called “customersList”. Write a lambda expression using the streams API to produce a sublist that contains only the senior customers. A customer is considered senior if his/her age is more than 65 years. [5]
4. Study the following example (stolen from <http://json-schema.org/example1.html>). Your task is to show how we can use the Gson library (or any other open source 3rd party library) to read and parse this JSON input to get a collection of Java objects. You can assume that this JSON file is available at “<http://json-schema.org/sculptures>”. You need to write a) the model class(es) and b) the Gson code to read contents like these into a collection of Java objects. [5]

```
1  [
2      {
3          "id": 2,
4          "name": "An ice sculpture",
5          "price": 12.50,
6          "tags": ["cold", "ice"],
7          "dimensions": {
8              "length": 7.0,
9              "width": 12.0,
10             "height": 9.5
11         },
12         "warehouseLocation": {
13             "latitude": -78.75,
14             "longitude": 20.4
15         }
16     },
17     {
18         "id": 3,
```

```
19     "name": "A blue mouse",  
20     "price": 25.50,  
21     "dimensions": {  
22         "length": 3.1,  
23         "width": 1.0,  
24         "height": 1.0  
25     },  
26     "warehouseLocation": {  
27         "latitude": 54.4,  
28         "longitude": -32.7  
29     }  
30 }  
31 ]
```

References

Cathy Zhang. A suit of case studies in relational database design. Master's thesis, Department of Computer Science, School of Graduate Studies, 2012.